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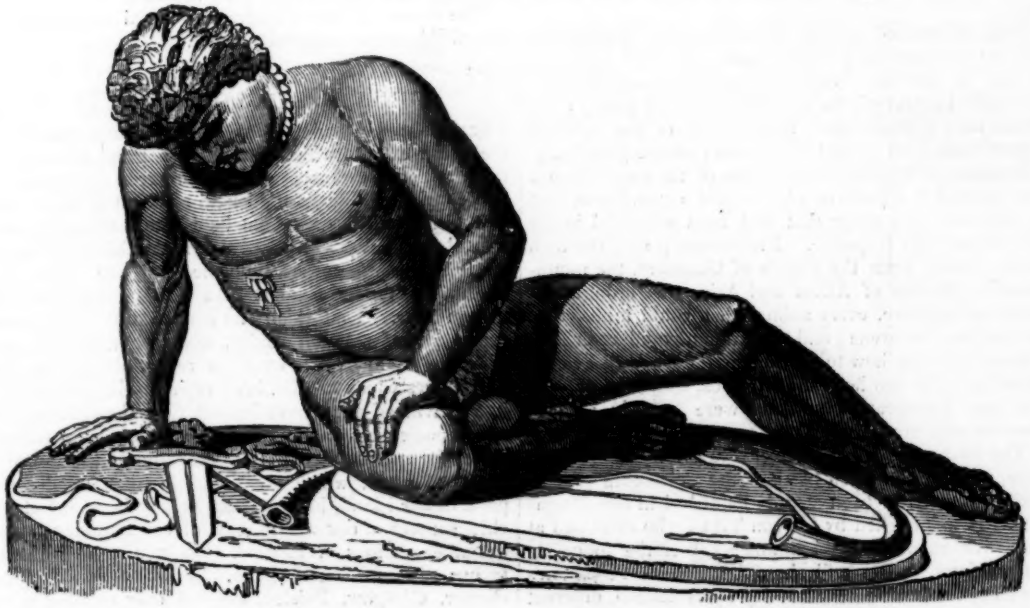
THE DYING GLADIATOR.



THIS celebrated statue, which is now at Rome, has given rise to much discussion, and it is at least doubtful whether it bears its right name. It is thus described by Winkelmann (vol. ii. p. 241, French ed.):—"It represents a man of toil, who has lived a laborious life, as we may see from the countenance, from one of the hands, which is genuine, and from the soles of the feet. He has a cord round his neck, which is knotted under the chin; he is lying on an oval buckler, on which we see a kind of broken horn*." The rest of Winkelmann's remarks are little to the purpose.

Pliny, in a long chapter of his thirty-fourth book, wherein he enumerates the most famous statuaries who worked in metal, mentions one called Ctesilaus, who appears to have lived near, or shortly after, the time of Phidias. "He made," says Pliny, "a wounded man expiring (or fainting), and he succeeded in expressing exactly how much vitality still remained." It is possible that this bronze or metal figure may be the original of the marble figure now in Rome, to which we give the name of the Dying Gladiator. As far as we can judge from the attitude, the armour, the general character of the figure, and the deep expression of pain and intense agony, the whole composition may very possibly be intended to represent the death of one of those wretched beings, who were compelled to slaughter each other for the amusement of the Roman capital. The broken horn is, however, considered by some critics as an objection to this statue being a representation of a gladiator; the signal for the combat, they say, might be given with a horn, but what had the fighter to do with one? This seems to us a small objection. The presence of the horn does not necessarily imply that it belonged to the gladiator; it is a symbol, a kind of short-hand, which brings to recollection the crowded amphitheatre, the eager populace, the devoted victims, the signal for attack; and the sad contrast to all this is exhibited in the figure of the dying man. As to any difficulty that may be raised about the kind of armour, or the cord round the neck, this may be removed by considering that the Romans had gladiators from all countries, and that these men often fought with their native weapons, and after the fashion of their own country. The savage directors of these spectacles knew full well the feelings of animosity with which uncivilized nations are apt to regard one another, and they found no way so ready for exhibiting to the populace all the bloody circumstances of a real battle, as to match together people of different nations.

Whether this figure be that of a dying gladiator or not, it is pretty certain it will long retain the name, at least in the popular opinion in this country, as it has furnished the subject for some of the noblest lines that one of the first of modern poets ever penned:—

"I see before me the gladiator lie:
He leans upon his hand—his manly brow
Consents to death, but conquers agony,
And his droop'd head sinks gradually low—
And through his side the last drops, ebbing slow
From the red gash, fall heavy, one by one,
Like the first of a thunder-shower; and now
The arena swims around him—he is gone,
Ere ceased the inhuman shout which hail'd the wretch who won.

"He heard it, but he heeded not—his eyes
Were with his heart, and that was far away;
He reck'd not of the life he lost, nor prize,
But where his rude hut by the Danube lay,
There were his young barbarians all at play,
There was their Dacian mother—he, their sire,
Butcher'd to make a Roman holiday—
All this rush'd with his blood.—Shall he expire,
And unavenged?—Arise, ye Goths, and glut your ire!"

* This horn, which was broken, has been restored, and that near the right hand is entirely modern.

Had the poet always felt and written in the same strain, he might have claimed the higher rank of one of the first of moralists. What must we think of the state of degradation in which the Roman people were sunk, when the sight of human blood was necessary to gratify their passion for novelty, and to preserve to their rulers a temporary popularity? Cruelty, ferocity, cowardice, and laziness were the vices necessarily cherished by such odious sights; and it is a fact that ought never to be lost sight of by those who wish to improve the character of society, that to be taught to look with indifference on the sufferings of any living object, is the first lesson in cruelty.

With the extension of the Roman empire by conquest, and the increase of private wealth obtained from the plunder of provinces, and by every species of extortion that could be devised, the practice of giving public exhibitions on a splendid scale became one of the duties of a great man, who wished to attain or secure popularity. But under the Emperors the games of the amphitheatre were carried to a pitch of extravagant expenditure, that far surpassed any thing that had been witnessed in the latter days of the Republic. From every part of the then known world, from the forests of Germany, the mountains and deserts of Africa and Asia, was brought, at enormous expense, every animal that could minister to the sports of the arena; and the Roman populace beheld, without knowing how to appreciate, the wondrous camelopard and the two-horned rhinoceros, which half a century ago European naturalists were scarcely able to describe with precision.

The enormous buildings erected to gratify the popular taste, were all surpassed by the huge Colosseum of Vespasian, which has been already described in this Magazine. It was opened by his son Titus, who exhibited at once five thousand wild animals. But the following extract from Tacitus will show that one of Vespasian's predecessors had ventured to try an exhibition, different indeed from any thing that the Colosseum could present, but not inferior in extravagance and cruelty. About fifty miles due east of Rome, in a wide valley enclosed by lofty mountains, lies the broad expanse of the Lake Celano (formerly called Fucinus): its greatest length is about fifteen miles, and its breadth from four to six and eight miles. The Emperor at immense cost had made a tunnel through a mountain, which bordered on the west bank of the lake, and to celebrate the opening of the tunnel with due splendour, he exhibited a naval battle on the waters. "About this time, after the mountain which separated the Fucine* lake from the river Liris had been cut through, a sea-fight was got up on the lake itself for the purpose of attracting a crowd to witness the magnificent work just completed. The Emperor Augustus once made an exhibition of this kind near the banks of the Tiber, by constructing an artificial pond; but his ships were of inferior size, and but few in number. Claudius equipped a hundred triremes and quadriremes, and 19,000 men; he also placed floats or rafts in such a position as to enclose a large part of the lake, so that the combatants might not have any chance of escape. He allowed space enough, however, for the full working of the oars, the skill of the helmsman, the driving of the ships against one another, and other manœuvres usual in a sea-fight. On the rafts were stationed companies and bands of the Prætorian cohorts, with breastworks before them, from which they could manage the engines for discharging missiles. The rest of the lake was occupied by the adverse fleets, whose ships were all provided with decks. The shores of the lake, the hills around it, and the tops of the mountains, were like a vast amphitheatre, crowded with a countless multitude from the nearest towns, and some from the capital itself, who were attracted by the novelty of the sight, or came out of compliment to the Emperor. The Emperor himself, in a magnificent cloak, and his wife Agrippina, at a short distance from him, dressed in a robe embroidered with gold, presided at the spectacle. The combatants, though criminals condemned to death, fought with all the courage of brave men; after many had been wounded, they were excused from completing the work of destruction on one another. At the close of the games, the passage for the waters was opened; but the incompleteness of the work was soon evident, for the canal, so far from being deep enough to drain the lake to the bottom, did not carry off the waters to half their depth."

The traces of this subterranean canal or tunnel are still visible at one extremity.

* Tacitus, Annals, xii. 56.

MINERAL KINGDOM.—SECTION 1.

THERE is perhaps no portion of the earth's surface, of the same extent, which contains so great a variety of those mineral substances which minister to the necessities and comforts of life, as the island of Great Britain; and it would almost seem, from its internal structure, as if Providence had pre-ordained that it should be the seat of an opulent and powerful people, and one of its chief instruments for the civilization and advancement of the human race. That this is no extravagant overstrained expression of national vanity, may, we think, be very easily made apparent, by a few reflections on the vast advantages which the British Empire itself, and, through it, the civilized world have derived, from the circumstance of our possessing an abundance of one particular mineral under the surface of our soil. The almost inexhaustible mines of COAL, which are found in so many different parts of our island, have unquestionably been one of the chief sources of our wealth, and of our influence among the other nations of Europe. All our great manufacturing towns,—Birmingham, Leeds, Sheffield, Manchester, Glasgow, Paisley, are not only situated in the immediate vicinity of coal, but never would have existed without it. If we had had no coal we should have lost the greater part of the wealth we derive from our metallic ores, for they could neither have been drawn from the depths where they lie concealed, nor, if found near the surface, could they have been profitably refined. Without coal the steam-engine would probably have remained among the apparatus of the natural philosopher: not only did the fuel supply the means of working the machine, but the demand for artificial power, in order to raise that same fuel from the bowels of the earth, more immediately led to the practical application of the great discovery made by Watt, while repairing the philosophical instrument of Dr. Black. Before the invention of the steam-engine, the power required to move machinery was confined to the impelling force of running water, of wind, of animal and human strength,—all too weak, unsteady, irregular, and costly to admit of the possibility of their extensive application. But the steam-engine gave a giant power to the human race, capable of being applied to every purpose, and in every situation where fuel can be found. Thus manufactures arose, and from the cheapness with which labour could be commanded, and the prodigious increase of work done in the same space of time, their produce was so reduced in price, as to bring luxuries and comforts within the reach of thousands who never tasted them before. New tastes thus excited and increasing consumption multiplied manufacturing establishments, and *their* demands led to great manufactures of machinery; competition led to improvement in the steam-engine itself, and thus, by the reciprocal action of improvement and demand, our machinery and manufactures gradually acquired that high degree of perfection to which they are now arrived. With the improvement of the steam-engine, came the wonderful application of it to navigation, which has

already, in a few years, produced such extraordinary results; and which, when combined with its farther application to wheel carriages, must at no great distance of time occasion a revolution in the whole state of society. At this moment a steam-vessel is exploring lands in the interior of Africa, never before visited by civilized man; the harbinger, we may confidently hope, of future civilization, prosperity, and happiness to that vast portion of the earth's surface. Are we not then fully justified in saying that these great results, involving the future destinies of the human race, may be traced to the discovery of the beds of coal placed by nature in our little island?

Next to coal our IRON is the most important of our mineral treasures; and it is a remarkable circumstance, that the ore of that metal, which is so essential to the wants of man that civilization has never been known to exist without it, should in Great Britain be placed in greatest abundance, not only in the vicinity of, but actually associated with the coal necessary to separate the metal from the impurities of the ore, so as to render it fit for our use. In Sweden, and most other countries where iron mines exist, the ore is refined by means of wood; but no space on the surface of our island could have been spared to grow timber for such a purpose; and thus, without coal, in place of being, as we are now, great exporters of wrought and unwrought iron to distant nations, we must have depended on other countries for this metal; to the vast detriment of many of our manufactures, which mainly owe their improvement and extension to the abundance and consequent cheapness of iron.

There are extensive mines of LEAD in Derbyshire, Yorkshire, Northumberland, Lanarkshire, Dumfriesshire, and several other places in Great Britain, sufficient not only for the internal demand for that metal, but yielding a considerable amount for exportation. COPPER is produced in large quantities in Cornwall, and the same county has been celebrated for its TIN mines for nearly two thousand years.

Coal, iron, lead, copper, and tin, are the principal minerals of our country, which, in common language, are usually associated with the idea of the produce of mines. Silver and gold we have none, with the exception of a little of the former contained in some of the ores of lead, and which is separated by refining, when in sufficient quantity to yield a profit beyond the expense of the process; but we have some other metals, highly useful in the arts, such as zinc, antimony, and manganese.

Besides the substances above mentioned, we have many other mineral treasures of great importance still to be noticed. Of these the most valuable perhaps is limestone, from its use in agriculture, to ameliorate and increase the fertility of the soil, and from its being an indispensable ingredient in mortar for building; and there are not many parts of the island far distant from a supply of this material. Building stone is found in most parts of the country; and although we must go to Italy for the material for the art of sculpture to be employed upon, we have freestones applicable to all the purposes of ornamental architecture, and we have many marbles of great beauty. If stones be far off, clay is never wanting to supply a substitute; and the most distant nations have their daily food served up in vessels, the materials of which, dug from our clay-pits, have given occupation to thousands of our industrious population in our potteries and china manufactures. For our supply of SALT, that essential part of the daily sustenance of almost every human being, we are not dependent on the brine which encircles our island, for we have in the mines and salt-springs of Cheshire and Worcestershire almost inexhaustible stores of the purest quality, unmixed with those earthy and other ingredients which must be separated by an expensive process, before a culinary salt can be obtained from the water of the sea.

Familiar as are almost every one of the mineral substances we have named, in the common business of life, there are many persons who have but a very imperfect idea from whence they are derived, and what previous processes they undergo before they can be made applicable to our use. We do not doubt, therefore, that we shall contribute to the instruction and entertainment of many of our readers, by devoting a portion of our Magazine to a series of articles, in which we propose to make them acquainted with the natural history of our mineral treasures, with the mode in which they are obtained from the mines, and with the operations they are subjected to, before they can be brought forward as marketable commodities To do this, however, in a clear and intelligible manner, some preliminary information is indispensable; without this, the terms we must necessarily employ, in our descriptions of the mode in which the substances exist under the surface of the earth, would not be understood. This introductory matter, however, we are persuaded will not be found the least instructive or the least entertaining part of the information we shall lay before our readers; on the contrary, we feel assured that it will disclose to many of them wonders of nature, of which they had previously no conception. It will embrace a popular sketch of the leading doctrines in GEOLOGY, that department of science whose object is to investigate the nature and properties of the substances of which the solid crust of the earth is composed; the laws of their combinations, as constituting the elements of rocks, and other stony masses; the arrangement of these different masses, and their relations to each other; the changes which they appear to have undergone at various successive periods; and, finally, to establish a just theory of the construction of that solid crust. In the formation of organized bodies, that is, in the structure of animals and plants, the most superficial observer cannot fail to discover a beautiful and refined mechanism; but if we cast our eyes upon the ground, and look at heaps of gravel, sand, clay, and stone, it seems as if chance only had brought them together, and that neither symmetry nor order can be discovered in their nature. But a closer examination soon convinces us of that which, reasoning from the wisdom and designs manifested by other parts of creation, we might beforehand have very naturally been led to expect, viz. that in all the varieties of form, and structure, and change, which the study of the mineral kingdom displays, laws as fixed and immutable prevail, as in the most complicated mechanism of the human frame, or in the motions of the heavenly bodies; and if astronomy has discovered how beautifully "the heavens declare the glory of God," as certainly do we feel assured, by the investigations of geology, that the earth "showeth his handy work."

In our next article, therefore, we shall commence that brief outline of geology, which we consider to be a necessary introduction to our proposed description of the chief mineral productions of our island.

FLYING.

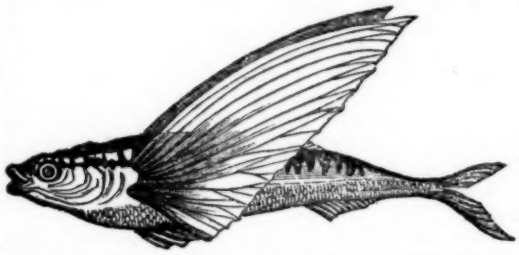
THE act of flying is performed in the following manner:—The bird first launches itself in the air either by dropping from a height or leaping from the ground: it raises up at the same time the wings, the bones of which correspond very closely to those of the human arm, the place of the hand, however, being occupied by only one finger. It then spreads out the wings to their full extent in a horizontal direction, and presses them down upon the air; and by a succession of these strokes the bird rises up in the air with a velocity proportioned to the quickness with which they succeed each other. As the inter-

vals between the strokes are more and more lengthened, the bird either remains on the same level or descends. This vertical movement can only be performed by birds whose wings are horizontal, which is probably the case with the lark and quail. When birds fly horizontally, their motion is not in a straight line, but obliquely upwards, and they allow the body to come down to a lower level before a second stroke is made by the wings, so that they move in a succession of curves. To ascend obliquely the wings must repeat their strokes upon the air in quick succession, and in descending obliquely these actions are proportionally slower. The tail in its expanded state supports the hind part of the body: when it is depressed while the bird is flying with great velocity, it retards the motion; and by raising the hinder part of the body, it depresses the head. When the tail is turned up it produces a contrary effect, and raises the head. Some birds employ the tail to direct their course, by turning it to one side or the other in the same manner as a helm is used in steering a ship. We may observe that there is a peculiarity in the bones of birds which serves to lighten their bodies and greatly to facilitate their motions. A considerable portion of the skeleton is formed into receptacles for air, the interior of most bones in adult birds being destitute of marrow, and containing air-cells which communicate with the windpipe or the mouth. In young birds the interior of the bone is filled with marrow, which, however, becomes gradually absorbed to make room for the admission of air. This gradual expansion of the air-cells, and absorption of the marrow, can no where be observed so well as in young tame geese when killed at different periods.

Flying is not confined to those inhabitants of the air which have wings composed of feathers; there are many of these whose bodies are so light as not to require wings made of such strong materials, and which have them composed of thin membranes of the slightest texture. This is the case with all flying insects. The *Bat*, which belongs to the class Mammalia, is supplied with a kind of wing peculiar to itself which may be considered as an intermediate link between the wings of birds and those of other animals.

The bat's wings are formed of membranes spread upon the bones which correspond to those of the arm, fore-arm, and hand in man, and of the fore-leg in quadrupeds. So far they resemble those of birds; they differ, however, in the materials of which they are composed, and in the bones bearing a closer resemblance to those of the human hand. They have what is peculiar to themselves—a hook-like process attached to the bone of the wing, by which they lay hold and support themselves upon the cornices of buildings, and so far employ their wings as hands. These wings when extended are of great length. In the larger species found in some parts of India, Africa, and South America, celebrated under the name of Vampyres, they often measure five feet; and Sir Hans Sloane was in possession of a specimen brought from Sumatra, the wings of which measured seven feet. As the bat itself is not rendered buoyant by any of the means employed in the internal structure of birds, and as its wings are themselves membranes of some strength, great extent of surface is required in them: they are not, however, fitted for long flight, and must be considered as a very remarkable deviation from the structure of the bird on one part, and from that of the quadruped on the other. The only regularly formed quadruped that has the power of flying is the *Flying Squirrel*. The substi-

tute for wings in this animal is a broad fold of the integument spread out on each side of the body, and attached to the fore and hind legs, reaching as far as the feet; so that by stretching out its feet it spreads this fold and keeps it in an extended state, in which it has a nearer resemblance to a parachute than a wing. Some species of lizards and fishes are also furnished with substitutes for wings, by which they are enabled to support themselves in the air, and fly for short distances. In the *Flying Fish* the substitute consists of a simple elongation



of the pectoral fins to a sufficient extent to support the animal's weight, in this respect corresponding with the wings of birds, since the pectoral fin of fishes is analogous to the anterior extremity of the other classes.

THE URSINE BABOON,

[From a Correspondent.]

"With shattered rocks loose sprinkled o'er,
Ascends abrupt the mountain hoar,
Whose crags o'erhang the Bushman's cave,
(His fortress once, and now his grave,)
Where the grim satyr-faced baboon
Sits railing to the rising moon,
Or chiding, with hoarse angry cry,
The herdsman as he wanders by."

THE Ursine Baboon of South Africa (*Cercopithecus Ursinus*, or *Simia Cynocephalus*) is known to naturalists from the descriptions of Sparrman, Vaillant, Burchell, and other scientific travellers. It is an animal of very

considerable strength, and attains, when full grown, the size of a very large Newfoundland dog. It resembles the dog in the shape of its head, and is covered with shaggy hair, of a brownish colour, except on the face and paws, which are bare and black. On level ground it always goes on all-fours; but among the rocks and precipices, which are its natural refuge and habitation, it uses its hinder feet and *hands* somewhat as a human being would do, only with inconceivably greater boldness and agility, in clambering up the crags, or in springing from cliff to cliff.

The ursine baboon is not believed to be in any degree carnivorous, but subsists on wild fruits, and principally on the numerous variety of *uintjes* (edible roots and bulbs), which abound in the districts it inhabits. These roots it digs out of the earth with its paws, the nails of which, from this cause, are generally short, as if worn down by constant use; in other respects they nearly resemble those of the human hand.

For defence against its enemies, such as the leopard, hyæna, wild-dog (*hyæna venatica*), &c. the ursine baboon is armed with formidable canine teeth about half an inch long; and, when driven to extremity, will defend itself successfully against the fiercest wolf-hound. It has a mode of grappling its antagonist by the throat with its fore-paws, or *hands*, while it tears open the jugular vein with its tusks. In this manner I have known a stout baboon despatch several dogs before he was overpowered; and I have been assured by the natives that even the leopard is sometimes defeated and worried to death by a troop of these animals. It is only collectively, however, and in large bands, that they can successfully oppose this powerful enemy. In many of the mountainous districts the leopard, it is said, subsists chiefly by preying upon baboons and monkeys; lying in wait and pouncing upon them suddenly, precisely as the domestic cat deals with rats.

Though well armed for conflict, the ursine baboon, except in self-defence, appears to be a harmless and inoffensive animal. They are, it is true, occasionally troublesome to mankind, by robbing gardens, orchards, and corn-fields; but I never heard of any body being attacked by them, although I resided for some years in a spot where they are so numerous that the district takes its name from them, viz. *Baviaans Rivier*, or River of Baboons. There is, indeed, one remarkable story told at the Cape of a party of these animals carrying off an infant from the vicinity of Wynberg, a village about seven miles from Cape Town, and, on the alarm being given by the distracted mother, retreating with it to the summit of the precipitous mountains 3000 feet in height, which overhang that pleasant village. My informants, persons of respectability, assured me that this incident had occurred within their own recollection; and that the child was recovered by a party of the inhabitants, after a long, anxious, and perilous pursuit, without having sustained any material injury. This singular abduction, the only instance of the kind I ever heard of, may, after all, have been prompted possibly by the erratic maternal feeling of some female baboon, bereaved of her own offspring, rather than by any ferocious or mischievous propensity.

Be this as it may, the strong attachment of these creatures to their own young is an interesting trait of their character. I have frequently witnessed very affecting instances of their attachment, when a band of them happened to be discovered by some of the African Colonists in their orchards or corn-fields. On such occasions, when hunted back to the mountains with dogs and guns, the females, if accidentally separated from their young ones, would often, reckless of their safety, return to search for them through the very midst of their fierce pursuers.

On more peaceful occasions, also, I have very often contemplated them with great pleasure and interest. It is the practice of these animals to descend from their rocky fastnesses, in order to enjoy themselves on the banks of the mountain rivulets, and to feed on the nutritious bulbs which grow in the rich alluvial soil of the valleys. While thus occupied, they usually take care to be within reach of some steep crag or precipice, to which they may fly for refuge on the appearance of an enemy; and some of their number are always stationed as sentinels on large stones or other elevated situations, in order to give timely warning to the rest of the approach of danger. It has frequently been my lot, when riding through these secluded valleys, to come suddenly, on turning the corner of a rock, upon a troop of forty or fifty baboons thus quietly congregated. Instantly on my appearance, a loud cry of alarm would be raised by the sentinels; and then the whole band would scamper off with the utmost precipitation. Off they would go, hobbling on all-fours, after their awkward fashion, on level ground; then splashing through the stream, if they had it to cross; then scrambling, with most marvellous agility up the rocky cliffs, often many hundred feet in height, and where certainly no other creature without wings could possibly follow them; the large males bringing up the rear-guard, ready to turn with fury upon my hounds if they attempted to molest them; the females, with their young ones in their arms, or clinging to their backs. Thus, climbing, and chattering, and squalling, they would ascend the perpendicular and perilous-looking crags, while I looked on and watched them, interested by the almost human affection which they evinced for their mates and their offspring; and sometimes not a little amused, also, by the angry vociferation with which the old satyr-like leaders would scold me, when they had got fairly upon the rocks, and felt themselves secure from pursuit. T. P.

THE JACQUARD LOOM.

The history of manufactures affords few parallels to the rapid and marked improvements made in the art of silk-weaving in this country during the last six years.

The invention by which these improvements have been principally accomplished is a loom contrived by M. Jacquard, and which, bearing his name, will probably prove a lasting record of his mechanical talents.

Scarcely ten years have elapsed since the first introduction of the machine into this country, yet its superiority over the looms formerly used for figure silk-weaving is so decided, that it has entirely superseded all these, and has been in no small degree instrumental in bringing that curious and beautiful art to its present state of advancement. Through its means time is importantly economised in the preliminary steps, while the most difficult part of the labour is so simplified that this branch of silk-weaving is no longer, as heretofore, confined to the most skilful of the craft. It is no small proof of the enterprising and intelligent spirit of this country that several alterations, by which this machine has been materially simplified and improved, have been already made by our working artisans, and are in advantageous operation; "while in Lyons, the city of its birth, it still remains unaltered, either in form or arrangement, from the original conception of the first ingenious inventor*."

From the evidence given by Dr. Bowring before the Committee of the House of Commons appointed to inquire into the state of the Silk Trade, we obtain the following interesting particulars of M. Jacquard as related to Dr. Bowring by himself:—

He was originally a manufacturer of straw-hats, and it was not until the peace of Amiens that his attention was first attracted to the subject of mechanism. The communication between France and England being then open, an English newspaper fell into his hands. In this he met with a paragraph stating that a premium

* Lardner's Cabinet Cyclopædia, Silk Manufacture, p. 256.

would be awarded by a society in this country to any person who should weave a net by machinery. The perusal of this extract awakened his latent mechanical powers, and induced him to turn his thoughts to the discovery of the required contrivance. He succeeded, and produced a net woven by machinery of his own invention. It seems, however, that the pleasure of success was the only reward which he coveted, for as soon as accomplished he became indifferent to the work of his ingenuity—threw it aside for some time, and subsequently gave it to a friend as a matter in which he no longer took any interest. The net was by some means at length exhibited to some persons in authority, and by them sent to Paris. After a period had elapsed in which M. Jacquard declares that he had entirely forgotten his production, he was sent for by the prefect of Lyons, who asked him if he had not directed his attention to the making of nets by machinery. He did not immediately recollect the circumstance to which the prefect alluded; the net was however produced, and this recalled the fact to his mind. The prefect then rather peremptorily desired him to produce the machine by which this result had been effected. M. Jacquard asked three weeks for its completion; at the end of which time he brought his invention to the prefect, and directing him to strike some part of the machine with his foot, a knot was added to the net. The ingenious contrivance was sent to Paris, and an order was thence despatched for the arrest of the inventor. Under Napoleon's arbitrary government even the desire for the diffusion of improvements was evinced in a most unconciliatory manner; and while inventions in the useful arts were sufficiently prized, no respect was paid to those persons by whom they were originated. Accordingly M. Jacquard found himself under the keeping of a gens-d'arme, by whom he was to be conducted to Paris in all haste, so that he was not permitted even to go home to provide himself with the requisites for his sudden journey. When arrived in Paris he was required to produce his machine at the Conservatory of Arts, and submit it to the examination of inspectors. After this ordeal he was introduced to Bonaparte and to Carnot, the latter of whom said to him, with a look of incredulity, "Are you the man who pretends to this impossibility—who professes to tie a knot in a stretched string?" In answer to this inquiry the machine was produced and its operation exhibited and explained. Thus strangely was M. Jacquard's first mechanical experiment brought into notice and patronised. He was afterwards required to examine a loom on which from twenty to thirty thousand francs had been expended, and which was employed in the production of articles for the use of Bonaparte. M. Jacquard offered to effect the same object by a simple machine, instead of the complicated one by which the work was sought to be performed,—and improving on a model of Vaucanson, produced the mechanism which bears his name. A pension of a thousand crowns was granted to him by the government as a reward for his discoveries, and he returned to Lyons, his native town. So violent, however, was the opposition made to the introduction of his loom, and so great was the enmity he excited in consequence of his invention, that three times he with the greatest difficulty escaped with his life. The *Conseil des Prud' hommes*, who are appointed to watch over the interests of the Lyonese trade, broke up his machine in the public *place*; "the iron (to use his own expression) was sold for iron—the wood for wood, and he, its inventor, was delivered over to universal ignominy." The ignorance and prejudice which caused the silk-weavers of Lyons to destroy a means of assistance to their labours, capable of being made a source of great benefit to themselves, was not dispelled till the French began to feel the effects of foreign competition in their silk manufacture. They then were forced to adopt the Jacquard loom, which led to such great improvement in their silk weaving, and this machine is now extensively employed through the whole of the silk manufacturing districts of France as well as of England.

ON THE CURE OF BURNS BY COTTON WOOL.

BURNS and scalds are probably the most common injuries to which the people of England are exposed. In our mines and manufactories they are constantly occurring. Even in ordinary life we hear almost daily of such accidents. It often happens that females, by standing incautiously too near a grate, set fire to their cotton dresses, and the flames spreading rapidly along the soft texture of the cotton, soon envelope the whole of their persons. Reading in bed by candle-light is a frequent source of similar disasters. Servants again, while engaged in the removal of boiling water for domestic purposes, are often, through carelessness or accident, the subjects of scalds.

Burns and scalds are exactly of the same nature. It is the intolerable *heat* of the liquid or of the solid substance inflicting the injury, which is the cause of both. In looking, therefore, for the means of cure, we should try to discover some remedial agent which will favour, in the highest degree, the restoration to a healthy state of those parts of the body that have been impaired or destroyed by the action of heat.

The plans of treatment which have been introduced from time to time are various; but they may be included under two heads,—namely, those of a *soothing* and those of a *stimulating* character. Of the stimulating class are spirits of turpentine, spirits of wine, whisky, brandy, &c., with any of which the burned parts are kept moist until immediate pain is subdued, and the process of restoration is begun. After these changes have taken place, ointments or poultices are usually had recourse to. Heat has been also tried as a stimulating remedy for burns; and, however singular it may seem, many persons hold the parts burned near to a fire in order to remove the effects of heat. The soothing class of remedies includes the application of cold water, of ice, of oils, and *cotton wool*.

Cotton wool bids fair to supersede many of the common remedies in the treatment of burns. It is said that cotton wool was first used with this intention in America. There is nothing improbable in this, for the practice is of recent origin, and cotton is both grown and manufactured in that country. The discovery of its sanative virtues has been attributed to accident. As the story goes,—the child of a woman who was engaged in the preparation of cotton, happened, in some way or other, to get itself extensively burned with boiling water. The mother, in her agony, having no person with her at the time, laid the child down in some cotton on the floor, which promised to be the safest and softest position, and hastened away to procure medical assistance. The medical man of the village, however, was from home. The poor woman, on her return, found that the child had rolled about in the cotton and had become covered in the burned parts with a thick coating of it. The cotton appeared to have produced great relief of pain; the child had now ceased to cry and was actually cheerful. Some hours elapsed before the medical attendant arrived, but as the child continued cheerful and the cotton had become pretty firmly adherent to the sores, the mother would not allow of its being removed. Within the period of ten or twelve days the cotton began to drop off spontaneously; and in a fortnight from the receipt of the injury, the whole of it was detached, leaving a perfect cure,—the skin being without mark or contraction, and, in short, quite natural.

The cotton treatment has since had a pretty extensive trial in different parts of England and Scotland. As might have been expected, scientific observation has enabled medical men to point out the way in which the cotton may be most advantageously applied, and it has also enabled them to define the limits of its utility.

In relation to their degrees of severity, burns may be divided into *four* kinds,—1st, When the injury is of the slightest nature, the skin remains of its natural colour and without blisters. 2d, When the injury is somewhat greater, the superficial skin becomes elevated, and blisters are formed. 3d, When the injury is still more severe, the deep-seated skin is burned brown and dry, and it feels like leather. 4th, When the injury is of the most violent kind, not only the deep-seated skin is scorched, but the parts beneath it, to a greater or less extent, are burned to dryness and are consequently dead. The cotton treatment is little applicable to burns coming under the fourth division, we shall therefore, in this place, speak only of its application to those of the 1st, 2d, and 3d kinds, and more particularly to the 2d and 3d. We must impress upon our readers here, as we are anxious to do in all other cases of medical treatment, that the safest plan, wherever practicable, is to apply for professional aid. The difficulty which an unprofessional person must always feel, is that of distinguishing between one class of injuries or diseases, and another class. However, as burns and scalds require immediate attention, we proceed to state the mode in which cotton may be employed, when no medical man is at hand.

The cotton should be applied to the burned parts as soon after the injury as is possible; and, if blisters have formed, they should not be opened. Where it can be done without incurring considerable delay, the cotton should be carded before its application into thin flakes. These flakes should be laid on the injured part, and piled one on the other until they form a soft covering, which, under light pressure, should be about an inch in thickness. A bandage should then be passed around the patient to prevent the cotton from falling off, but care must be taken not to draw the bandage tight or allow it to press the body. Its object is simply to retain the cotton in its place.

After this, the first step, is taken, nothing remains to be done while the cotton is observed to *stick* to the surface of the injured part and to remain *dry*. Should any portion of the cotton, however, become *wet*, either through the discharge of water from the blisters, or the formation of purulent matter, and continue wet for a day or two, the attendant should, at the end of that time, pick the wetted cotton gently away, and supply its place with dry cotton. The general rule, consequently, is very plain. While the patient is free from pain, and the cotton dry and adherent to the surface of the burn, no change should be made; but should the cotton become wet at any part, and continue so for a day or two, the wetted portion is to be removed, and its place supplied with dry cotton. The treatment is to be conducted thus until the cure is completed.

The manner in which cotton acts in the cure of burns is very evident. It excludes the air and forms a warm and soft covering for the injured parts. Under this protection, the restorative powers of nature quickly repair the injury. Every day's experience tends to prove that the less we interfere with those powers, or permit them to be interfered with, in the medical treatment of superficial burns occurring amongst persons of healthy constitutions, the more successful will be the practice.

THE BATTLE OF CORUNNA.

The 16th of January is the anniversary of the battle of Corunna, and the death of the gallant Sir John Moore. The French invasion of Spain and Portugal in the beginning of the year 1808 was one of the most unprovoked and indefensible aggressions ever perpetrated. The scheme for the conquest and partition of the latter kingdom is supposed to have been arranged in October, 1807, between Bonaparte and Godoy, called the Prince of the Peace, the infamous minion of the Spanish Queen and her imbecile and degraded husband Charles IV. In March, 1808, the national spirit of the Spaniards fired at the weakness with which their Sovereign was surrendering the independence of the country into the hands of the French Emperor, broke out at Aranjuez and Madrid into tumultuous insurrection, and compelled Charles to abdicate in favour of his eldest son, Ferdinand, Prince of Asturias. Soon after this, however, Bonaparte contrived to inveigle both Ferdinand and his father to Bayonne in France, where he induced them in the beginning of May to surrender all their claims upon the Spanish crown in favour of himself or his nominee; and then, having shut up his prisoners, with the other branches of the royal family whom he had contrived to get into his hands, in an old castle in Champagne, he caused his brother Joseph, then King of Naples, to be proclaimed on the 24th of July the successor to the vacant throne. In exchange he sent his brother-in-law Murat to the Neapolitans. Before this, however, the indignation of the people of Spain had organized a formidable resistance to the foreign usurper; patriotic associations had been formed in many of the principal towns, which were under the direction of a presiding junta at Seville; and deputies had been despatched from Asturia to request the assistance of England, where they arrived on the 6th of June. The required aid was rendered by this country liberally, and as it were by acclamation: on the 12th of July Sir Arthur Wellesley set sail from Cork in command of a large force; on the 21st of August he beat the French General Junot at Vimiera, and on the 30th of the same month, by what was called the Convention of Cintra, the French troops agreed to evacuate Portugal. The next expedition despatched to the Peninsula was that commanded by Sir John Moore. This officer, who was the eldest son of Dr. John Moore, the well-known author of 'Zeluco,' and other able works, was born at Glasgow on the 13th of November, 1761, and had served with distinction in various quarters of the globe. He was appointed Commander-in-Chief of the Forces in Spain and Portugal on the 6th of October. Soon after this he commenced his advance into the interior of the Peninsula, in which he persevered till he reached Salamanca. The force, however, which he had under his command was utterly insufficient to cope with the gigantic armament which Bonaparte had by this time collected to maintain his brother's throne. According to Colonel Napier, Moore had only 24,000 men to oppose 330,000 of the enemy. In these circumstances nothing could be done by the English without the most general and most zealous co-operation on the part of the natives. This co-operation, or any cordial disposition to afford it, Sir John Moore could not perceive to exist; and it must be confessed that his situation was extremely difficult, embarrassing, and discouraging. Meantime, while he was deliberating as to the prudence of continuing his advance, intelligence reached him of an important advantage gained by the enemy. This at once determined him to commence his retreat to the coast, as his only chance of preserving his troops. Accordingly, on the 26th of December, he began his route towards Vigo, in the north-west corner of Spain, but was soon after induced to alter his course for the port of Corunna, still farther to the north. This march of two hundred and fifty miles, over a country almost without roads, in the depth of winter with an army dispirited and disorganized, and pursued by superior numbers flushed with recent triumph, must ever rank with the ablest military achievements of ancient or modern times. It was effected amidst terrible privation, suffering, and loss of life; but at length, on the 16th of January, 1809, about 14,500 of the troops reached the neighbourhood of the place of embarkation. Marshal Soult, however, with a body of not less than 20,000 men under his command, was close upon them, and ready to attack them before they could complete

their preparations for going on board the ships. It was resolved, therefore, to offer battle to the enemy. The French made the attack about two o'clock in the afternoon, and for a time had the advantage; but Moore then ordered an advance of a part of his troops, who soon turned the tide of the contest. The French were repulsed at every point; and the English were allowed to embark without molestation. But the life of their gallant commander paid for the victory. "Sir John Moore," says Colonel Napier, "while earnestly watching the result of the fight about the village of Elvina, was struck on the left breast by a cannon shot; the shock threw him from his horse with violence; he rose again in a sitting posture; his countenance unchanged, and his steadfast eye still fixed upon the regiments engaged in his front; no sigh betrayed a sensation of pain; but, in a few moments, when he was satisfied that the troops were gaining ground, his countenance brightened, and he suffered himself to be taken to the rear. Then was seen the dreadful nature of his hurt; the shoulder was shattered to pieces, the arm was hanging by a piece of skin, the ribs over the heart broken and bared of flesh, and the muscles of the breast torn into long strips, which were interlaced by their recoil from the dragging of the shot. As the soldiers placed him in a blanket his sword got entangled, and the hilt entered the wound. Captain Hardinge, a staff officer, who was near, attempted to take it off, but the dying man stopped him, saying, 'It is as well as it is. I had rather it should go out of the field with me.' And in that manner, so becoming a soldier, Moore was borne from the fight. * * * The blood flowed fast, and the torture of his wound increased; but such was the unshaken firmness of his mind, that those about him, judging from the resolution of his countenance that his hurt was not mortal, expressed a hope of his recovery. Hearing this, he looked steadfastly at the injury for a moment, and then said, 'No; I feel that to be impossible.' Several times he caused his attendants to stop and turn him round, that he might behold the field of battle; and when the firing indicated the advance of the British, he discovered his satisfaction, and permitted the bearers to proceed. Being brought to his lodgings the surgeons examined his wound, but there was no hope; the pain increased, and he spoke with great difficulty. At intervals he asked if the French were beaten, and, addressing his old friend Colonel Anderson, he said, 'You know that I always wished to die this way.' Again he asked if the enemy were defeated, and being told they were, observed, 'It is a great satisfaction to me to know we have beaten the French.' His countenance continued firm, and his thoughts clear; once only, when he spoke of his mother, he became agitated. He inquired after the safety of his friends and the officers of his staff; and he did not even in this moment forget to recommend those whose merit had given them claims to promotion. His strength was failing fast, and life was just extinct, when, with an unsubdued spirit, as if anticipating the baseness of his posthumous calumniators, he exclaimed, 'I hope the people of England will be satisfied. I hope my country will do me justice.' The battle was scarcely ended when his corpse, wrapped in a military cloak, was interred by the officers of his staff in the citadel of Corunna. The guns of the enemy paid his funeral honours, and Soult, with a noble feeling of respect for his valour, raised a monument to his memory."

The death of Sir John Moore has furnished the subject of a poem of extraordinary beauty, the author of which was long unknown. It is now ascertained to be the production of one whose compositions were few, and who died young—Wolfe.

"Not a drum was heard, not a funeral-note,
As his corse to the rampart we hurried;
Not a soldier discharged his farewell-shot
O'er the grave where our hero we buried.

We buried him darkly at dead of night,
The sods with our bayonets turning,
By the struggling moonbeam's misty light,
And the lantern dimly burning.

No useless coffin enclosed his breast,
Not in sheet or in shroud we wound him;
But he lay like a warrior taking his rest,
With his martial cloak around him.

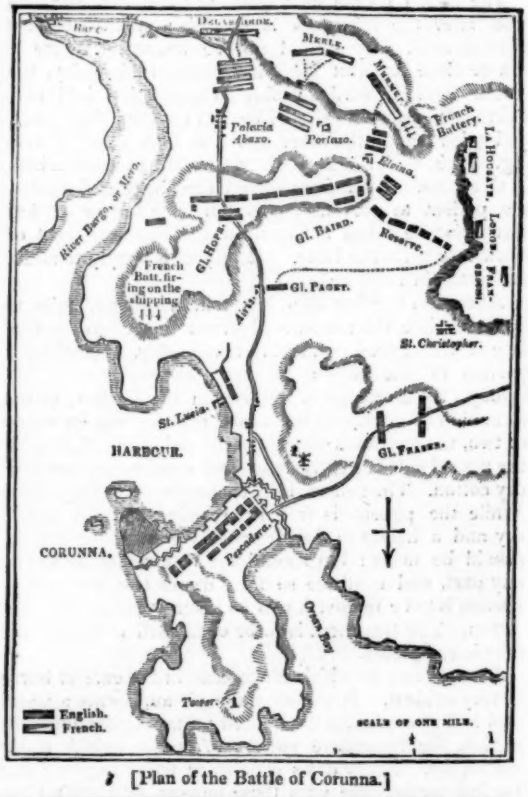
Few and short were the prayers we said,
And we spoke not a word of sorrow;
But we steadfastly gazed on the face that was dead,
And we bitterly thought of the morrow.

We thought, as we hollow'd his narrow bed,
And smooth'd down his lonely pillow,
That the foe and the stranger would tread o'er his head.
And we far away on the billow!

Lightly they'll talk of the spirit that's gone,
And o'er his cold ashes upbraid him,—
But little he'll reck, if they let him sleep on
In the grave where a Briton has laid him.

But half of our heavy task was done,
When the clock struck the hour for retiring;
And we heard the distant and random gun
That the foe was sullenly firing.

Slowly and sadly we laid him down,
From the field of his fame fresh and gory;
We carved not a line, and we raised not a stone—
But we left him alone with his glory!"



[Plan of the Battle of Corunna.]

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